

What is claimed is:

1. In a transfer carrier for a flexible printed circuit board which holds a plurality of flexible printed circuit boards in a state of being adhered on an upper surface of the transfer carrier, each of the flexible printed circuit boards being formed with a positioning reference hole and a bonding portion on which a semiconductor device is bonded, the transfer carrier comprising:

a base plate on which a resin layer with a smooth surface to be adhered with lower surfaces of the flexible printed circuit boards is formed;

back-up opening portions opened respectively at portions of the base plate corresponding to the bonding portions, through each of the back-up opening portions a back-up portion for receiving a pressing force at a time of bonding the semiconductor device penetrating;

reference pin opening portions opened at the base plate and through which reference pins penetrate respectively, the reference pins being inserted into the reference holes of the flexible printed circuit boards to position the bonding portions of the flexible printed circuit boards with respect to the back-up opening portions, respectively; and

reference portions formed at the base plate, the reference portions respectively contacting with reference members for relatively positioning the reference pin opening portions and the reference pins.

2. A transfer carrier for a flexible printed circuit board according to claim 1, wherein the resin layer is formed by resin of silicon group.

3. A transfer carrier for a flexible printed circuit board according to claim 1, wherein the resin layer is formed by hardening liquid resin on the base plate.

4. A transfer carrier for a flexible printed circuit board according to claim 1, wherein the resin layer is electrically conductive.

5. A transfer carrier for a flexible printed circuit board according to claim 1, wherein each of the reference members at least includes a positioning pin, and each of the reference portions is a positioning hole for receiving a corresponding one of the positioning pins therethrough.

6. A transfer carrier for a flexible printed circuit board according to claim 1, wherein each of the reference members includes a positioning reference surface which contacts with a side surface of the base plate, and the side surface is the reference portions.

7. In a transfer carrier for a flexible printed circuit board which holds a plurality of flexible printed circuit boards in a

state of being adhered on an upper surface of the transfer carrier, each of the flexible printed circuit boards being formed with a positioning reference hole and a bonding portion on which a semiconductor device is bonded, the transfer carrier comprising:

a base plate on which a resin layer with a smooth surface to be adhered with lower surfaces of the flexible printed circuit boards is formed;

opening portions opened respectively at portions of the base plate corresponding to the bonding portions, through each of the opening portions a back-up portion for receiving a pressing force at a time of bonding the semiconductor device penetrating, and through each of the opening portions a reference pin being inserted into the reference hole of corresponding one of the flexible printed circuit boards to position the bonding portion of the corresponding one of the flexible printed circuit boards penetrating; and

reference portions formed at the base plate, the reference portions respectively contacting with reference members for relatively positioning the reference pin opening portions and the reference pins.

8. A transfer carrier for a flexible printed circuit board according to claim 7, wherein the resin layer is formed by resin of silicon group.

9. A transfer carrier for a flexible printed circuit board

according to claim 7, wherein the resin layer is formed by hardening liquid resin on the base plate.

10. A transfer carrier for a flexible printed circuit board according to claim 7, wherein the resin layer is electrically conductive.

11. A transfer carrier for a flexible printed circuit board according to claim 7, wherein each of the reference members at least includes a positioning pin and each of the reference portions is a positioning hole for receiving a corresponding one of the positioning pins therethrough.

12. A transfer carrier for a flexible printed circuit board according to claim 7, wherein each of the reference members includes a positioning reference surface which contacts with a side surface of the base plate, and the side surface is the reference portions.

13. In a method of mounting electronic parts on a flexible printed circuit board in which a plurality of flexible printed circuit boards are held on a transfer carrier for the flexible printed circuit boards which is formed by a base plate and a resin layer formed on an upper surface of the base plate, and semiconductor devices are bonded on bonding portions of the flexible printed circuit boards, the method comprising the steps of:

contacting reference portions of the base plate with reference members thereby to relatively position reference pin opening portions opened at the base plate and reference pins to be respectively inserted into reference holes of the flexible printed circuit boards in a state where the reference pins are respectively penetrated through the reference pin opening portions;

inserting the reference pins into the reference holes of the flexible printed circuit boards to position the flexible printed circuit boards, respectively, and contacting adhesively lower surfaces of the flexible printed circuit boards to the resin layer in this state;

withdrawing the reference pins from the reference holes and releasing the contact state between the reference portions and the reference members;

inserting a back-up portion of a bonding apparatus into a back-up opening portion which is formed at a position of the transfer carrier corresponding to the bonding portion of the flexible printed circuit board thereby to support the bonding portion from a lower direction; and

bonding a semiconductor device on the bonding portion supported by the back-up portion.

14. In a method of mounting electronic parts on a flexible printed circuit board in which a plurality of flexible printed circuit boards are held on a transfer carrier for the flexible printed

circuit boards which is formed by a base plate and a resin layer formed on an upper surface of the base plate, semiconductor devices are bonded on bonding portions of the flexible printed circuit boards, and small parts are soldered on solder coupling portions, the method comprising the steps of:

contacting reference portions of the base plate with reference members thereby to relatively position reference pin opening portions opened at the base plate and reference pins to be respectively inserted into reference holes of the flexible printed circuit boards in a state where the reference pins are respectively penetrated through the reference pin opening portions;

inserting the reference pins into the reference holes of the flexible printed circuit boards to position the flexible printed circuit boards, respectively, and contacting adhesively lower surfaces of the flexible printed circuit boards to the resin layer in this state;

withdrawing the reference pins from the reference holes and releasing the contact state between the reference portions and the reference members;

inserting a back-up portion of a bonding apparatus into a back-up opening portion which is formed at a position of the transfer carrier corresponding to the bonding portion of the flexible printed circuit board thereby to support the bonding portion from a lower direction;

bonding a semiconductor device on the bonding portion

supported by the back-up portion;

supplying solder to electrodes of the solder coupling portions of the flexible printed circuit boards on which the semiconductor devices are bonded;

contacting the small parts to the solder thereby to mount the small parts on the flexible printed circuit boards on which the semiconductor devices are bonded;

transferring into a heating furnace and heating a transfer carrier for the flexible printed circuit boards which holds the flexible printed circuit boards on which the small parts are mounted thereby to melt the solder to solder the small parts; and

taking out the flexible printed circuit boards on which the semiconductor devices are bonded and the small parts are soldered from the resin layer of the transfer carrier.

15. In a method of mounting electronic parts on a flexible printed circuit board in which a plurality of flexible printed circuit boards are held on a transfer carrier for the flexible printed circuit boards which is formed by a base plate and a resin layer formed on an upper surface of the base plate, and semiconductor devices are bonded on bonding portions of the flexible printed circuit boards, the method comprising the steps of:

contacting reference portions of the base plate with reference members thereby to relatively position reference pin opening portions opened at the base plate and reference pins to be

respectively inserted into reference holes of the flexible printed circuit boards in a state where the reference pins are respectively penetrated through the reference pin opening portions;

inserting the reference pins into the reference holes of the flexible printed circuit boards to position the flexible printed circuit boards, respectively, and contacting adhesively lower surfaces of the flexible printed circuit boards to the resin layer in this state;

withdrawing the reference pins from the reference holes and releasing the contact state between the reference portions and the reference members;

inserting a back-up portion of a bonding apparatus at a position of the opening portions corresponding to the bonding portion of the flexible printed circuit board thereby to support the bonding portion from a lower direction; and

bonding a semiconductor device on the bonding portion supported by the back-up portion.

16. In a method of mounting electronic parts on a flexible printed circuit board in which a plurality of flexible printed circuit boards are held on a transfer carrier for the flexible printed circuit boards which is formed by a base plate and a resin layer formed on an upper surface of the base plate, semiconductor devices are bonded on bonding portions of the flexible printed circuit boards, and small parts are soldered on solder coupling portions,



the method comprising the steps of:

contacting reference portions of the base plate with reference members thereby to relatively position opening portions opened at the base plate and reference pins to be respectively inserted into reference holes of the flexible printed circuit boards in a state where the reference pins are respectively penetrated through the opening portions;

inserting the reference pins into the reference holes of the flexible printed circuit boards to position the flexible printed circuit boards, respectively, and contacting adhesively lower surfaces of the flexible printed circuit boards to the resin layer in this state;

withdrawing the reference pins from the reference holes and releasing the contact state between the reference portions and the reference members;

inserting a back-up portion of a bonding apparatus at a position of the opening portions corresponding to the bonding portion of the flexible printed circuit board thereby to support the bonding portion from a lower direction;

bonding a semiconductor device on the bonding portion supported by the back-up portion;

supplying solder to electrodes of the solder coupling portions of the flexible printed circuit boards on which the semiconductor devices are bonded;

contacting the small parts to the solder thereby to mount

the small parts on the flexible printed circuit boards on which the semiconductor devices are bonded;

transferring into a heating furnace and heating a transfer carrier for the flexible printed circuit boards which holds the flexible printed circuit boards on which the small parts are mounted thereby to melt the solder to solder the small parts; and

taking out the flexible printed circuit boards on which the semiconductor devices are bonded and the small parts are soldered from the resin layer of the transfer carrier.